

What is claimed is:

1. A friction agitation processing method of processing a workpiece by penetrating a processing tool into the workpiece keeping rotation and removing the processing tool from the workpiece after friction agitation processing, said friction agitation processing method comprising the steps of:

providing an emergency stop demand signal for demanding a stop of the processing tool in execution of the friction agitation processing in an emergency;

executing a removal of the processing tool from the workpiece at appearance of said emergency stop demand signal; and

stopping rotation of the processing tool after said removal of the processing tool from the workpiece.

2. A friction agitation processing method as defined in claim 1, wherein said removal of the processing tool from the workpiece is executed after a finishing time of scheduled friction agitation processing.

3. A friction agitation processing method as defined in claim 2, wherein said rotation of processing tool is stopped after a lapse of a predetermined period of time from appearance of said emergency stop demand signal.

4. A friction agitation processing method as defined in claim 1, wherein the processing tool is mounted to and positioned with respect to the workpieces by an automatic machine adapted to stop coincidentally with a stop of rotation of the processing tool.

5. A friction agitation processing method as defined in claim 1, wherein the friction agitation processing is applied to forming a weld across a joint between superposed metal plate workpieces.

6. A friction agitation processing apparatus for processing a workpiece by a processing tool that is penetrated into a workpiece keeping rotation and removed from the workpiece after friction agitation processing, said friction agitation processing apparatus comprising:

emergency stop means for providing an emergency stop demand signal for demanding a stop of the processing tool in execution of the friction agitation processing in an emergency;

execution detection means for detecting execution of the friction agitation processing by the processing tool

stop control means for stopping rotation of the processing tool after removal of the processing tool from the workpiece at appearance of said emergency stop demand signal

from said emergency stop means when said execution detection means detects execution of the friction agitation processing.

7. A friction agitation welding apparatus as defined in claim 6, wherein said stop control means comprises timing means for providing a stop signal for stopping rotation of the processing tool after a finishing time of scheduled friction agitation processing.

8. A friction agitation processing apparatus as defined in claim 7, wherein the processing tool is enclosed by a safety fence provided with a door and electromagnetic lock means for locking and unlocking the door, said electromagnetic lock means keeping said door locked until said finishing time.

9. A friction agitation processing apparatus as defined in claim 8, wherein said processing tool is mounted to and positioned with respect to the workpieces by an automatic machine adapted to stop coincidentally with a stop of rotation of the processing tool.

10. A friction agitation processing apparatus as defined in claim 6, wherein the friction agitation processing is applied to forming a weld across a joint between superposed metal plate workpieces.